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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/118,833	07/20/1998	TOSHIRO NISHI	0965-0232P-S	9403

2292 7590 12/29/2005

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EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	**PAPER NUMBER**
1746	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/118,833	NISHI ET AL.	
	Examiner	Art Unit	
	Jonathan S. Crepeau	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-9,14-17,19,20,22,23,25 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-9,14-17,19,20,22,23,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on November 9, 2005 has been entered. Claims 6-9, 14-17, 19, 20, 22, 23, 25, and 26 are pending.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Claim Rejections - 35 USC § 103

2. Claims 6-9, 14-17, 19, 20, 22, 23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 8-50913 in view of Soma et al (U.S. Pat. 5,411,767).

Regarding claims 6, 8, 14, and 16, in the abstract, JP 8-50913 teaches a method of making a solid oxide fuel cell comprising the step of integrally sintering (burning) an air electrode (23) and an interconnector (24), which together comprise a support tube (22). Regarding claims 15 and 17, the fuel cell further comprises a fuel electrode (26) and an electrolyte (25). Regarding claims 7, 9, 19, and 20, as shown in Figures 1 and 2, the interconnector is located at the top of the tube, thus providing for current collection from the fuel electrode through an adjacent interconnector in the "vertical" direction.

The Japanese reference does not expressly teach the material(s) which may comprise the interconnector (claims 6, 8, 14, and 16), the temperature at which the sintering is performed (claims 22 and 23), or the relative density of the interconnectors (claims 25 and 26).

Soma et al. teach a solid electrolyte type fuel battery having an interconnector comprising a material having the formula ABO_3, wherein A is preferably Ca, Ba, or Sr, and B is preferably

Ti (see column 5, lines 13-38). In column 3, line 23, Soma et al. describe this material as being "suitable for [an] interconnector." In Table 1, Soma et al. disclose that the interconnectors are heat treated at a temperature of 1400°C. The relative density of the interconnector is 95% or greater (see col. 9, line 61).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the courts have held that the selection of a known material based on its suitability for its intended use is *prima facie* obvious (MPEP §2144.07). Accordingly, the artisan would be motivated to use the species disclosed by Soma in the interconnector of the Japanese reference. Furthermore, the artisan would be motivated to use a sintering temperature of 1400°C in the manufacturing process of JP '913. In column 6, lines 44-49, Soma et al. teach that a heat treatment temperature of at least 1250°C for these materials is "preferabl[e]." Therefore, the artisan would be motivated to perform the sintering step of JP '913 at a temperature of 1400°C.

Regarding claims 6, 8, 14, and 16, in column 4, line 40 et seq., Soma et al. teach an interconnector material formula of $(La_{1-x}D_x)_{1-u}B_{1-w}O_3$, where *D* can be Ca, Sr, or Ba, *B* can be Ti (+Mg, +Nb), *x* is less than or equal to 0.3, *u* is greater than or equal to 0, and *w* is less than or equal to 0.1.

Soma does not expressly teach the same or overlapping subscript ranges for the $(La_{1-x}D_x)_{1-u}B_{1-w}O_3$ compounds as recited in claims 6, 8, 14, and 16. For example, claims 6 and 14 provide for a $Sr_{0.8}La_{0.2}TiO_3$ material, whereas the reference provides for a $Sr_{0.09}La_{0.2}TiO_3$ material (when w=0, x=0.3, u=0.71, D is Sr, and B is Ti). Also, claims 8 and 16 provide for a

$Mg_{0.8}La_{0.2}TiO_3$ material, whereas the reference provides for a $Mg_{0.8}La_{0.2}Ti_{0.2}O_3$ material (when x=0, u=0.8, w=0, and B is $Ti_{0.2}Mg_{0.8}$).

However, the claimed materials and prior art materials have substantially identical elemental compositions, and therefore could reasonably be expected to have similar properties. As such, the artisan may manipulate these subscript ranges so as to vary the necessary amounts of reagents, and thus optimize the production costs of the materials. If a prior art range and a claimed range do not overlap, obviousness may still exist if the ranges are close enough that one would not expect a difference in properties. *In re Woodruff* 16 USPQ2d 1934 (Fed. Cir. 1990); *Titanium Metals Corp. v. Banner* 227 USPQ 7723 (Fed Cir. 1985); *In re Aller* 105 USPQ 2233 (CCPA 1955). See also MPEP §2144.09.

Finally, the recitation in instant claims 15 and 17 that the electrodes, electrolyte, and interconnector are "laminated onto a substrate" is not considered to distinguish over the Japanese reference. As noted above, the reference identifies the combination of the air electrode and interconnector as a "support tube" (22), which itself functions as a substrate. Accordingly, it is seen that the "substrate" defined by the instant claims is integrally present in the fuel cell structure of the reference. Furthermore, it is noted that Soma et al. contemplate the interchangeability of a "true" substrate (4) and an "air electrode" substrate (13) in Figures 1 and 2 and in column 7, lines 3-10. Thus, these configurations are seen as functionally equivalent.

Response to Arguments

3. Applicant's arguments filed November 6, 2005 have been fully considered but they are not persuasive. Applicants state that the compounds identified above and asserted by the Examiner as being within the scope of the Soma reference (i.e., $Mg_{0.8}La_{0.2}Ti_{0.2}O_3$ and $Sr_{0.09}La_{0.2}TiO_3$) are of "unintelligible composition" and "cannot constitute a crystal structure." To support this, Applicant relies on charge balances determined by "chemical theory." However, it is submitted that Applicant's arguments are not adequately supported by evidence; i.e., textbooks or other publications discussing the relied-upon chemical theory. For example, Applicant concludes that a material having a charge balance of +0.2 can maintain a crystal structure sufficiently, but that a compound having a charge balance of -3 or +1 cannot do so. It is not clear from Applicant's discussion where the "cut-off" point is determined regarding the stability of the crystal structure, and no further support for making such a determination is given.

Further, the compounds given by the Examiner above are merely exemplary. As a further example, taking the formula at col. 4, line 40 of Soma, when x=0, u=0, w=0, and $B=Ti_{0.5}Mg_{0.5}$, a material having the formula $Mg_{0.5}LaTi_{0.5}O_3$ is possible. This material has a charge balance of 0. Therefore, even if Applicant's arguments regarding crystal structure stability above are found persuasive, the reference is still believed to provide for a material having a neutral charge balance, which material composition can be further manipulated resulting in the claimed composition.

An additional example of a material suggested by the reference is derived from the ABO_3 formula shown at col. 5, line 16. If $A=Sr_{0.8}Y_{0.2}$, the material becomes $Sr_{0.8}Y_{0.2}TiO_3$ and

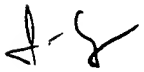
substantially reads on the material of Applicant's claim 6. As such, for all of these reasons, the rejection under 35 USC 103 above is maintained.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1746
December 23, 2005